

SEQUENCE LISTING

<110> Reed, John C.

<120> Novel Card Proteins Involved in Cell Death Regulation

<130> P-LJ 3650

<140>

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<170> PatentIn Ver. 2.0

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<212> DNA

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Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
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Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr			
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Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys			
115	120	125	
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Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser			
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Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro			
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Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg			
210	215	220	
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Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr			
225	230	235	240
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Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His Pro Trp Glu			
245	250	255	
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 Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser  
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 Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly  
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 Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln  
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 Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln  
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Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
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Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu			
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Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr			
515	520	525	
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Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser			
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Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			
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gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct			1728
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala			
565	570	575	
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Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg			
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Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly			
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att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc			1872
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			
610	615	620	
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Cys Phe Gln Glu Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
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Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr			
645	650	655	
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt			2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			
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Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			
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Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			
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His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			
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Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			
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Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			
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Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu			
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Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser			
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Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu			
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Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly			
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Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
850	855	860	

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Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala	
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gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta	2688
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885 890 895	
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Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln	
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915 920 925	
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930 935 940	
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Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln	
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aca act ctg agt gat gag atg agg cag gaa ctg agg gcc ctg gag cag	2928
Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln	
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Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met	
980 985 990	
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Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly			
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Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val Thr Phe			
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His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala Ile Asp			
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Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly His Leu			
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Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
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Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
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Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
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Pro	Thr	Ser	Thr	Ala	Val	Leu	Gly	Ser	Trp	Gly	Ser	Pro	Pro	Gln	Pro
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Asp	Glu	Thr	Ser	Gly	Ile	Tyr	Tyr	Thr	Glu	Ile	Arg	Glu	Arg	Glu	Arg
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225								230						235	
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Glu	Glù	Asn	Arg	Gly	His	Leu	Ile	Glu	Ile	Arg	Asp	Leu	Phe	Gly	Pro
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Cys	Arg	Glu	Leu	Ala	Gln	Ser	Lys	Val	Val	Ser	Leu	Ala	Glu	Leu	Ile
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Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile  
435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln  
450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly  
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp  
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Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu  
500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr  
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser  
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Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln  
545 550 555 560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala  
565 570 575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg  
580 585 590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly  
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu  
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu  
625 630 635 640

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645 650 655

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660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn  
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Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val  
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Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His  
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His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu  
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Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln  
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Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val  
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Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu  
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser  
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Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu  
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly  
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn  
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala  
865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu  
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln  
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Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp  
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Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu  
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Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln  
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Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln  
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Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met  
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Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser  
995 1000 1005

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val  
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Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile  
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Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro  
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Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val Met Arg  
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Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro Leu Leu  
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Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu Pro His  
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Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe Gln Met  
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Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala Arg Val  
185 1190 1195 1200

Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly  
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Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro Val Thr  
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Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val Thr Phe  
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His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala Ile Asp  
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Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro Pro Pro  
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Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly Ser Gly  
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Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys Tyr Arg  
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Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly His Leu  
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Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu Thr Leu  
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Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala Thr Thr  
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Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp Ala Pro  
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Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile Ala Arg  
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Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln Val Leu  
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Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg Lys Cys  
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Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile  
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Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Ala Asn Lys Ala  
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cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144  
His Ser Arg Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
35 40 45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192  
Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
50 55 60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240  
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
65 70 75 80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288  
Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
85 90 95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc 336  
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
100 105 110

Sequence Database

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Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys			
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acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct	432		
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser			
130	135	140	
gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt	480		
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu			
145	150	155	160
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Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala			
165	170	175	
ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc	576		
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro			
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agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg	624		
Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu			
195	200	205	
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Asp Glu Thr Ser Gly Ile Tyr Tyr Glu Ile Arg Glu Arg Glu Arg			
210	215	220	
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Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr			
225	230	235	240
ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag	768		
Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu			
245	250	255	
cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag	816		
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu			
260	265	270	
gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac	864		
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Gln Arg Pro His			
275	280	285	
ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg	912		
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val			
290	295	300	

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Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro			
305	310	315	320
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct			1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala			
325	330	335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg			1056
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly			
340	345	350	
aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc			1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser			
355	360	365	
tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc			1152
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile			
370	375	380	
gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct			1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser			
385	390	395	400
agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga			1248
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly			
405	410	415	
tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag			1296
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln			
420	425	430	
cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata			1344
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
435	440	445	
ctt ccc gag gca tcc ttc ctg atc acg gct ccg acc aca gct ctg cag			1392
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			
450	455	460	
aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg			1440
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly			
465	470	475	480
ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat			1488
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
485	490	495	

gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag			1536
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu			
500	505	510	
ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act			1584
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr			
515	520	525	
tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc			1632
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser			
530	535	540	
aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa			1680
Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			
545	550	555	560
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct			1728
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565	570	575	
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg			1776
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg			
580	585	590	
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt			1824
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly			
595	600	605	
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc			1872
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			
610	615	620	
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag			1920
Cys Phe Gln Glu Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
625	630	635	640
aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg			1968
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr			
645	650	655	
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt			2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			
660	665	670	
ttc cta ttg ggc ctg tta agt gat gag gag ggg gag aga gag atg gag aac			2064
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			
675	680	685	

atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc			2112
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			
690	695	700	
ccg tcc ctg cag ctg ctg cag cca cac tct ctg gag tcc ctc cac			2160
Pro Ser Leu Gln Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			
705	710	715	720
tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc			2208
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			
725	730	735	
cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta			2256
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			
740	745	750	
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Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			
755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta			2352
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			
770	775	780	
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Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu			
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Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser			
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835	840	845	
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Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
850	855	860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct			2640
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
865	870	875	880

gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta	2688		
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Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
915	920	925	
ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag	2832		
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930	935	940	
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Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser			
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Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser			
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Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser			
980	985	990	
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995	1000	1005	
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Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr			
1025	1030	1035	1040
aag cct ttg ggg act gac gat gac ttc tgg ggc ccc acg ggg cct gtg	3168		
Lys Pro Leu Gly Thr Asp Asp Phe Trp Gly Pro Thr Gly Pro Val			
1045	1050	1055	
gct act gag gta gtt gac aaa gaa aag aac ttg tac cga gtt cac ttc	3216		
Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe			
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Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro			
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Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val			
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Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Glu			
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1235	1240	1245	
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Phe Tyr Val Gly His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp			
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Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro	
1285 1290 1295	
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Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg	
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His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
 35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
 50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
 65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
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Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
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 115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
 130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
 145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
 165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
 180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu  
 195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg  
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Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr  
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Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu  
 245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu  
 260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His  
 275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val  
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Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro  
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala  
325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly  
340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser  
355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile  
370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser  
385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly  
405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln  
420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile  
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Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln  
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Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly  
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp  
485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu  
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Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr  
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser  
530 535 540

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565 570 575

580 585 590

595 600 605

610 615 620

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770 775 780

785 790 795 800

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Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu  
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Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly  
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Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn  
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Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala  
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Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu  
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Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln  
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Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp  
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Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu  
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Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser  
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Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser  
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Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser  
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His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe  
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Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr  
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Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val  
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Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val  
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Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln  
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Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro  
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Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu  
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Pro His Phe Val Ala Leu Gln Gly His Val Asp Thr Ser Leu Phe  
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Gln Met Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala  
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Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro  
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Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro  
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Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val  
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Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Glu  
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Leu Glu Leu Cys Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu  
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Phe Tyr Val Gly His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp  
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Lys Lys Asp Glu Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp  
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Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro  
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Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg  
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Glu Gln Leu Ile Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys  
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Leu His Gly Gln Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala  
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Glu Asn Thr Arg Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln  
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Ser Trp Asp Arg Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu  
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Gly Leu Leu Pro Leu Ser Ser  
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Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Ala Asn Lys Ala  
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cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144  
His Ser Arg Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
35 40 45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192  
Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
50 55 60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240  
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65

70

75

80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288  
 Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
 85 90 95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc 336  
 Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
 100 105 110

tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc 384  
 Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys  
 115 120 125

acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct 432  
 Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
 130 135 140

gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt 480  
 Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
 145 150 155 160

cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc 528  
 Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
 165 170 175

ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576  
 Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
 180 185 190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624  
 Ser Leu Ala Pro Arg Glu Gln Ala Pro Gly Thr Gln Trp Pro Leu  
 195 200 205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672  
 Asp Glu Thr Ser Gly Ile Tyr Tyr Glu Ile Arg Glu Arg Glu Arg  
 210 215 220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720  
 Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr  
 225 230 235 240

ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag 768  
 Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His Pro Trp Glu  
 245 250 255

cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag 816  
 Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu

260	265	270	
gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac			864
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Gln Arg Pro His			
275	280	285	
ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg			912
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val			
290	295	300	
gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca			960
Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro			
305	310	315	320
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct			1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala			
325	330	335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg			1056
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly			
340	345	350	
aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc			1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser			
355	360	365	
tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc			1152
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile			
370	375	380	
gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct			1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser			
385	390	395	400
agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga			1248
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly			
405	410	415	
tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag			1296
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln			
420	425	430	
cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata			1344
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
435	440	445	
ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag			1392
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			

450

455

460

aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg 1440  
 Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly  
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ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat 1488  
 Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp  
 485 490 495

gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag 1536  
 Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu  
 500 505 510

ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act 1584  
 Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr  
 515 520 525

tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc 1632  
 Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser  
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aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa 1680  
 Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln  
 545 550 555 560

gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct 1728  
 Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala  
 565 570 575

gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg 1776  
 Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg  
 580 585 590

aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt 1824  
 Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly  
 595 600 605

att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc 1872  
 Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu  
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tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag 1920  
 Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu  
 625 630 635 640

aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg 1968  
 Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr

645	650	655	
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			2016
660	665	670	
ttc cta ttg ggc ctg tta agt gat gag gag ggg gag aga gag atg gag aac Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			2064
675	680	685	
atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			2112
690	695	700	
ccg tcc ctg cag ctg ctg cag cca cac tct ctg gag tcc ctc cac Pro Ser Leu Gln Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			2160
705	710	715	720
tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			2208
725	730	735	
cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			2256
740	745	750	
gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			2304
755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			2352
770	775	780	
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785	790	795	800
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805	810	815	
gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu			2496
820	825	830	
aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly			2544

835

840

845

ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac	2592		
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
850	855	860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct	2640		
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
865	870	875	880
gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta	2688		
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu			
885	890	895	
cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag	2736		
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln			
900	905	910	
gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac	2784		
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
915	920	925	
ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag	2832		
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu			
930	935	940	
ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg aaa cca agt	2880		
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser			
945	950	955	960
gtg atg acc cct act gag ggc ctg gat acg gga gag atg agt aat agc	2928		
Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser			
965	970	975	
aca tcc tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc	2976		
Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser			
980	985	990	
cat gtt gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc	3024		
His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe			
995	1000	1005	
cca att gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg	3072		
Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val			
1010	1015	1020	
gaa ctc ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg	3120		
Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr			

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Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val				
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gct act gag gta gtt gac aaa gaa aag aac ttg tac cga gtt cac ttc				3216
Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe				
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cct gta gct ggc tcc tac cgc tgg ccc aac acg ggt ctc tgc ttt gtg				3264
Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val				
1075	1080	1085		
atg aga gaa gcg gtg acc gtt gag att gaa ttc tgt gtg tgg gac cag				3312
Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln				
1090	1095	1100		
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Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro				
1105	1110	1115	1120	
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Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu				
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cct cac ttt gtg gct ctc caa ggg ggc cat gtg gac aca tcc ctg ttc				3456
Pro His Phe Val Ala Leu Gln Gly His Val Asp Thr Ser Leu Phe				
1140	1145	1150		
caa atg gcc cac ttt aaa gag gag ggg atg ctc ctg gag aag cca gcc				3504
Gln Met Ala His Phe Lys Glu Glu Met Leu Leu Glu Lys Pro Ala				
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agg gtg gag ctg cat cac ata gtt ctg gaa aac ccc acg ttc tcc ccc				3552
Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro				
1170	1175	1180		
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Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro				
1185	1190	1195	1200	
gtc acc tct gtg gtg ttg ctt tac cac cgc gtc cat cct gag gaa gtc				3648
Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val				
1205	1210	1215		
acc ttc cac ctc tac ctg atc cca agt gac tgc tcc att cggt aag gcc				3696
Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala				

1220	1225	1230	
ata gat gat cta gaa atg aaa ttc cag ttt gtg cga atc cac aag cca Ile Asp Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro			3744
1235	1240	1245	
ccc ccg ctg acc cca ctt tat atg ggc tgt cgt tac act gtg tct ggg Pro Pro Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly			3792
1250	1255	1260	
tct ggt tca ggg atg ctg gaa ata ctc ccc aag gaa ctg gag ctc tgc Ser Gly Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys			3840
1265	1270	1275	1280
tat cga agc cct gga gaa gac cag ctg ttc tcg gag ttc tac gtt ggc Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly			3888
1285	1290	1295	
cac ttg gga tca ggg atc agg ctg caa gtg aaa gac aag aaa gat gag His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu			3936
1300	1305	1310	
act ctg gtg tgg gag gcc ttg gtg aaa cca gga gat ctc atg cct gca Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala			3984
1315	1320	1325	
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1330	1335	1340	
gcc ccg cag ttg ctg cac ttt gtg gac cag tat cga gag cag ctg ata Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile			4080
1345	1350	1355	1360
gcc cga gtg aca tcg gtg gag gtt gtc ttg gac aaa ctg cat gga cag Ala Arg Val Thr Ser Val Glu Val Leu Asp Lys Leu His Gly Gln			4128
1365	1370	1375	
gtg ctg agc cag gag cag tac gag agg gtg ctg gct gag aac acg agg Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg			4176
1380	1385	1390	
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1395	1400	1405	
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1410

1415

1420

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Leu Ser Ser

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His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys  
115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu  
195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg  
210 215 220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr  
225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu  
245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu  
260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His  
275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val  
290 295 300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro  
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala  
325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly  
340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser  
355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile  
370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser  
385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly  
405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln  
420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile  
435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln  
450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly  
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp  
485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu  
500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr  
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser  
530 535 540

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln  
545 550 555 560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala  
565 570 575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg  
580 585 590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly  
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu  
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu  
625 630 635 640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr  
645 650 655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg  
660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn  
675 680 685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val  
690 695 700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His  
705 710 715 720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala  
725 730 735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu  
740 745 750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln  
755 760 765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val  
770 775 780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu  
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser  
805 810 815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu  
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly  
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn  
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala  
865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu  
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln  
900 905 910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp  
915 920 925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu  
930 935 940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser  
945 950 955 960

Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser  
965 970 975

Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser  
980 985 990

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe  
995 1000 1005

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val  
1010 1015 1020

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr  
025 1030 1035 1040

Lys Pro Leu Gly Thr Asp Asp Phe Trp Gly Pro Thr Gly Pro Val  
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Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe  
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Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val  
1075 1080 1085

Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln  
1090 1095 1100

Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro  
105 1110 1115 1120

Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu  
1125 1130 1135

Pro His Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe  
1140 1145 1150

Gln Met Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala  
1155 1160 1165

Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro  
1170 1175 1180

Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro  
1185 1190 1195 1200

Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val  
1205 1210 1215

Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala  
1220 1225 1230

Ile Asp Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro  
1235 1240 1245

Pro Pro Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly  
1250 1255 1260

Ser Gly Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys  
265 1270 1275 1280

Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly  
1285 1290 1295

His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu  
1300 1305 1310

Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala  
1315 1320 1325

Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp  
1330 1335 1340

Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile  
345 1350 1355 1360

Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln  
1365 1370 1375

Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg  
1380 1385 1390

Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg  
1395 1400 1405

Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His  
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Leu Ser Ser

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Met	Met	Arg	Gln	Arg	Gln	Ser	His	Tyr	Cys	Ser	Val	Leu	Phe	Leu	Ser	
1										10					15	

gtc aac tat ctg ggg ggg aca ttc cca gga gac att tgc tca gaa gag 96

Val	Asn	Tyr	Leu	Gly	Gly	Thr	Phe	Pro	Gly	Asp	Ile	Cys	Ser	Glu	Glu	
20										25					30	

aat caa ata gtt tcc tct tat gct tct aaa gtc tgt ttt gag atc gaa 144

Asn	Gln	Ile	Val	Ser	Ser	Tyr	Ala	Ser	Lys	Val	Cys	Phe	Glu	Ile	Glu	
35										40					45	

gaa gat tat aaa aat cgt cag ttt ctg ggg cct gaa gga aat gtg gat 192

Glu	Asp	Tyr	Lys	Asn	Arg	Gln	Phe	Leu	Gly	Pro	Glu	Gly	Asn	Val	Asp	
50										55					60	

gtt gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc ccc 240

Val	Glu	Leu	Ile	Asp	Lys	Ser	Thr	Asn	Arg	Tyr	Ser	Val	Trp	Phe	Pro		
65										70					75		80

act gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg gta 288

Thr	Ala	Gly	Trp	Tyr	Leu	Trp	Ser	Ala	Thr	Gly	Leu	Gly	Phe	Leu	Val		
85										90					95		

agg gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag cac 336

Arg	Asp	Glu	Val	Thr	Val	Thr	Ile	Ala	Phe	Gly	Ser	Trp	Ser	Gln	His		
100										105					110		

ctg gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc ccc 384

Leu	Ala	Leu	Asp	Leu	Gln	His	His	Glu	Gln	Trp	Leu	Val	Gly	Gly	Pro		
115										120					125		

ttg ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc cac 432

Leu	Phe	Asp	Val	Thr	Ala	Glu	Pro	Glu	Glu	Ala	Val	Ala	Glu	Ile	His		
130										135					140		

ctc ccc cac ttc atc tcc ctc caa ggt gag gtc gac gtc tcc tgg ttt 480

Leu	Pro	His	Phe	Ile	Ser	Leu	Gln	Gly	Glu	Val	Asp	Val	Ser	Trp	Phe	
145																160
ctc	gtt	gcc	cat	ttt	aag	aat	gaa	ggg	atg	gtc	ctg	gag	cat	cca	gcc	528
Leu	Val	Ala	His	Phe	Lys	Asn	Glu	Gly	Met	Val	Leu	Glu	His	Pro	Ala	
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																170
																175
cgg	gtg	gag	cct	ttc	tat	gct	gtc	ctg	gaa	agc	ccc	agc	ttc	tct	ctg	576
Arg	Val	Glu	Pro	Phe	Tyr	Ala	Val	Leu	Glu	Ser	Pro	Ser	Phe	Ser	Leu	
																180
																185
																190
atg	ggc	atc	ctg	ctg	cg	atc	gcc	agt	ggg	act	cgc	ctc	tcc	atc	ccc	624
Met	Gly	Ile	Leu	Leu	Arg	Ile	Ala	Ser	Gly	Thr	Arg	Leu	Ser	Ile	Pro	
																195
																200
																205
atc	act	tcc	aac	aca	ttg	atc	tat	tat	cac	ccc	cac	ccc	gaa	gat	att	672
Ile	Thr	Ser	Asn	Thr	Leu	Ile	Tyr	Tyr	His	Pro	His	Pro	Glu	Asp	Ile	
																210
																215
																220
aag	ttc	cac	ttg	tac	ctt	gtc	ccc	agc	gac	gcc	ttg	cta	aca	aag	gcg	720
Lys	Phe	His	Leu	Tyr	Leu	Val	Pro	Ser	Asp	Ala	Leu	Leu	Thr	Lys	Ala	
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																230
																235
																240
ata	gat	gat	gag	gaa	gat	cgc	ttc	cat	ggt	gtg	cgc	ctg	cag	act	tcg	768
Ile	Asp	Asp	Glu	Asp	Arg	Phe	His	Gly	Val	Arg	Leu	Gln	Thr	Ser		
																245
																250
																255
ccc	cca	atg	gaa	ccc	ctg	aac	ttt	ggt	tcc	agt	tat	att	gtg	tct	aat	816
Pro	Pro	Met	Glu	Pro	Leu	Asn	Phe	Gly	Ser	Ser	Tyr	Ile	Val	Ser	Asn	
																260
																265
																270
tct	gct	aac	ctg	aaa	gta	atg	ccc	aag	gag	ttg	aaa	ttg	tcc	tac	agg	864
Ser	Ala	Asn	Leu	Lys	Val	Met	Pro	Lys	Glu	Leu	Lys	Leu	Ser	Tyr	Arg	
																275
																280
																285
agc	cct	gga	gaa	att	cag	cac	ttc	tca	aaa	ttc	tat	gct	ggg	cag	atg	912
Ser	Pro	Gly	Glu	Ile	Gln	His	Phe	Ser	Lys	Phe	Tyr	Ala	Gly	Gln	Met	
																290
																295
																300
aag	gaa	ccc	att	caa	ctt	gag	att	act	gaa	aaa	aga	cat	ggg	act	ttg	960
Lys	Glu	Pro	Ile	Gln	Leu	Glu	Ile	Thr	Glu	Lys	Arg	His	Gly	Thr	Leu	
																305
																310
																315
																320
gtg	tgg	gat	act	gag	gtg	aag	cca	gtg	gat	ctc	cag	ctt	gta	gct	gca	1008
Val	Trp	Asp	Thr	Glu	Val	Lys	Pro	Val	Asp	Leu	Gln	Leu	Val	Ala	Ala	
																325
																330
																335
tca	gcc	cct	cct	cct	ttc	tca	ggt	gca	gcc	ttt	gtg	aag	gag	aac	cac	1056

Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His  
 340 345 350

cgg caa ctc caa gcc agg atg ggg gac ctg aaa ggg gtg ctc gat gat 1104  
 Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp  
 355 360 365

ctc cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg gag 1152  
 Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu  
 370 375 380

cag gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg gtg 1200  
 Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val  
 385 390 395 400

gag aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att agt 1248  
 Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser  
 405 410 415

gaa agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg taa 1296  
 Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu  
 420 425 430

aatgagtcag ttaggtagtc tggaagagag aatccagcgt tctcattgga aatggataaa 1356

cagaaatgtg atcattgatt tcagtgttca agacagaaga agactggta acatctatca 1416

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tttcctcaa g 1487

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Asn Gln Ile Val Ser Ser Tyr Ala Ser Lys Val Cys Phe Glu Ile Glu  
 35 40 45

Glu Asp Tyr Lys Asn Arg Gln Phe Leu Gly Pro Glu Gly Asn Val Asp

50	55	60
Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro		
65	70	75
Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val		
85	90	95
Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His		
100	105	110
Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro		
115	120	125
Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His		
130	135	140
Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe		
145	150	155
Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala		
165	170	175
Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu		
180	185	190
Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro		
195	200	205
Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile		
210	215	220
Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala		
225	230	235
Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser		
245	250	255
Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser Asn		
260	265	270
Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr Arg		
275	280	285
Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln Met		
290	295	300
Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr Leu		

305	310	315	320
Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala Ala			
325	330	335	
Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His			
340	345	350	
Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp			
355	360	365	
Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu			
370	375	380	
Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val			
385	390	395	400
Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser			
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Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu			
420	425	430	
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aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg			
Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala			
20	25	30	
cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg			
His Ser Arg Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr			

35

40

45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192  
 Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Gln  
 50 55 60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240  
 Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
 65 70 75 80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288  
 Ser Leu Cys Ala Gln Ala Glu Gly Ala Gly His Ser Pro Ser Phe  
 85 90 95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc 336  
 Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
 100 105 110

tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc 384  
 Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys  
 115 120 125

acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct 432  
 Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
 130 135 140

gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt 480  
 Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
 145 150 155 160

cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc 528  
 Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
 165 170 175

ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576  
 Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
 180 185 190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624  
 Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu  
 195 200 205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672  
 Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg  
 210 215 220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720  
 Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

225	230	235	240
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<pre> cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag      816 Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu 260           265           270 </pre>			
<pre> gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac      864 Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Gln Arg Pro His 275           280           285 </pre>			
<pre> ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg      912 Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val 290           295           300 </pre>			
<pre> gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca      960 Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro 305           310           315           320 </pre>			
<pre> ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct      1008 Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala 325           330           335 </pre>			
<pre> gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg      1056 Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly 340           345           350 </pre>			
<pre> aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc      1104 Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser 355           360           365 </pre>			
<pre> tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc      1152 Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile 370           375           380 </pre>			
<pre> gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct      1200 Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser 385           390           395           400 </pre>			
<pre> agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga      1248 Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly 405           410           415 </pre>			
<pre> tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag      1296 Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln </pre>			

420	425	430	
cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile 435	440	445	1344
ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln 450	455	460	1392
aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly 465	470	475	1440
ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp 485	490	495	1488
gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu 500	505	510	1536
ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr 515	520	525	1584
tgc ctg atg cag cag atg aag cgg aag gaa aa a ctc aca ctg act tcc Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser 530	535	540	1632
aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln 545	550	555	1680
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala 565	570	575	1728
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg 580	585	590	1776
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly 595	600	605	1824
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			1872

610	615	620	
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag 1920			
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
625	630	635	640
aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg 1968			
Lys Gly Arg Gly Lys Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr			
645	650	655	
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt 2016			
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			
660	665	670	
ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac 2064			
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			
675	680	685	
atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc 2112			
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			
690	695	700	
ccg tcc ctg cag ctg ctg cag cca cac tct ctg gag tcc ctc cac 2160			
Pro Ser Leu Gln Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			
705	710	715	720
tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc 2208			
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			
725	730	735	
cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta 2256			
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			
740	745	750	
gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag 2304			
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			
755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta 2352			
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			
770	775	780	
gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc 2400			
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu			
785	790	795	800
ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt 2448			
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser			

805	810	815	
gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg			2496
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu			
820	825	830	
aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc			2544
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly			
835	840	845	
ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac			2592
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
850	855	860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct			2640
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
865	870	875	880
gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta			2688
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu			
885	890	895	
cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag			2736
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln			
900	905	910	
gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac			2784
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
915	920	925	
ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag			2832
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu			
930	935	940	
ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg ctg gac cag			2880
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln			
945	950	955	960
aca act ctg agt gat gag atg agg cag gaa ctg agg gcc ctg gag cag			2928
Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln			
965	970	975	
gag aaa cct cag ctg ctc atc ttc agc aga cgg aaa cca agt gtg atg			2976
Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met			
980	985	990	
acc cct act gag ggc ctg gat acg gga gag atg agt aat agc aca tcc			3024
Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser			

995

1000

1005

tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc cat gtt 3072  
 Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val  
 1010 1015 1020

gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc cca att 3120  
 Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile  
 1025 1030 1035 1040

gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg gaa ctc 3168  
 Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val Glu Leu  
 1045 1050 1055

ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg aag cct 3216  
 Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro  
 1060 1065 1070

ttg ggg act gac gat gac ttt ctg ggg cct gaa gga aat gtg gat gtt 3264  
 Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val Asp Val  
 1075 1080 1085

gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc ccc act 3312  
 Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro Thr  
 1090 1095 1100

gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg gta agg 3360  
 Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val Arg  
 1105 1110 1115 1120

gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag cac ctg 3408  
 Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His Leu  
 1125 1130 1135

gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc ccc ttg 3456  
 Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Pro Leu  
 1140 1145 1150

ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc cac ctc 3504  
 Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His Leu  
 1155 1160 1165

ccc cac ttc atc tcc ctc caa ggt gag gtg gac gtc tcc tgg ttt ctc 3552  
 Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe Leu  
 1170 1175 1180

gtt gcc cat ttt aag aat gaa ggg atg gtc ctg gag cat cca gcc cgg 3600  
 Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala Arg



1380	1385	1390	
cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg gag cag 4224 Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu 1395 1400 1405			
gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg gtg gag 4272 Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val Glu 1410 1415 1420			
aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att agt gaa 4320 Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser Glu 1425 1430 1435 1440			
agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg taa 4365 Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu 1445 1450 1455			
aatgagtcag ttaggtagtc tggaagagag aatccagcgt tctcattgga aatggataaa 4425 cagaaatgtg atcattgatt tcagtgttca agacagaaga agactggta acatctatca 4485 cacaggctt caggacagac ttgtAACCTG gcatgtaccc attgactgtt tcctcatgca 4545 ttttcctcaa g 4556			
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Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala 20 25 30			
His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr 35 40 45			
Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln 50 55 60			
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg 65 70 75 80			

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys  
115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu  
195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg  
210 215 220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr  
225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu  
245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu  
260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His  
275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val  
290 295 300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro  
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala  
325 330 335

Gly	Ile	Gly	Lys	Ser	Thr	Leu	Ala	Arg	Gln	Val	Lys	Glu	Ala	Trp	Gly
340															350
Arg	Gly	Gln	Leu	Tyr	Gly	Asp	Arg	Phe	Gln	His	Val	Phe	Tyr	Phe	Ser
355															365
Cys	Arg	Glu	Leu	Ala	Gln	Ser	Lys	Val	Val	Ser	Leu	Ala	Glu	Leu	Ile
370															380
Gly	Lys	Asp	Gly	Thr	Ala	Thr	Pro	Ala	Pro	Ile	Arg	Gln	Ile	Leu	Ser
385															400
Arg	Pro	Glu	Arg	Leu	Leu	Phe	Ile	Leu	Asp	Gly	Val	Asp	Glu	Pro	Gly
405															415
Trp	Val	Leu	Gln	Glu	Pro	Ser	Ser	Glu	Leu	Cys	Leu	His	Trp	Ser	Gln
420															430
Pro	Gln	Pro	Ala	Asp	Ala	Leu	Leu	Gly	Ser	Leu	Leu	Gly	Lys	Thr	Ile
435															445
Leu	Pro	Glu	Ala	Ser	Phe	Leu	Ile	Thr	Ala	Arg	Thr	Thr	Ala	Leu	Gln
450															460
Asn	Leu	Ile	Pro	Ser	Leu	Glu	Gln	Ala	Arg	Trp	Val	Glu	Val	Leu	Gly
465															480
Phe	Ser	Glu	Ser	Ser	Arg	Lys	Glu	Tyr	Phe	Tyr	Arg	Tyr	Phe	Thr	Asp
485															495
Glu	Arg	Gln	Ala	Ile	Arg	Ala	Phe	Arg	Leu	Val	Lys	Ser	Asn	Lys	Glu
500															510
Leu	Trp	Ala	Leu	Cys	Leu	Val	Pro	Trp	Val	Ser	Trp	Leu	Ala	Cys	Thr
515															525
Cys	Leu	Met	Gln	Gln	Met	Lys	Arg	Lys	Glu	Lys	Leu	Thr	Leu	Thr	Ser
530															540
Lys	Thr	Thr	Thr	Thr	Leu	Cys	Leu	His	Tyr	Leu	Ala	Gln	Ala	Leu	Gln
545															560
Ala	Gln	Pro	Leu	Gly	Pro	Gln	Leu	Arg	Asp	Leu	Cys	Ser	Leu	Ala	Ala
565															575
Glu	Gly	Ile	Trp	Gln	Lys	Lys	Thr	Leu	Phe	Ser	Pro	Asp	Asp	Leu	Arg
580															590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly  
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu  
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu  
625 630 635 640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr  
645 650 655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg  
660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn  
675 680 685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val  
690 695 700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His  
705 710 715 720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala  
725 730 735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu  
740 745 750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln  
755 760 765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val  
770 775 780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu  
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser  
805 810 815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu  
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly  
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn  
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala  
865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu  
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln  
900 905 910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp  
915 920 925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu  
930 935 940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln  
945 950 955 960

Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln  
965 970 975

Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met  
980 985 990

Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser  
995 1000 1005

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val  
1010 1015 1020

Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile  
1025 1030 1035 1040

Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val Glu Leu  
1045 1050 1055

Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro  
1060 1065 1070

Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val Asp Val  
1075 1080 1085

Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro Thr  
1090 1095 1100

Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val Arg  
105 1110 1115 1120

Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His Leu  
1125 1130 1135

Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro Leu  
1140 1145 1150

Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His Leu  
1155 1160 1165

Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe Leu  
1170 1175 1180

Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala Arg  
1185 1190 1195 1200

Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu Met  
1205 1210 1215

Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro Ile  
1220 1225 1230

Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile Lys  
1235 1240 1245

Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala Ile  
1250 1255 1260

Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser Pro  
1265 1270 1275 1280

Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser Asn Ser  
1285 1290 1295

Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr Arg Ser  
1300 1305 1310

Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln Met Lys  
1315 1320 1325

Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr Leu Val  
1330 1335 1340

Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala Ala Ser  
1345 1350 1355 1360

Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His Arg  
1365 1370 1375

Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp Leu  
1380 1385 1390

Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu Gln  
1395 1400 1405

Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val Glu  
1410 1415 1420

Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser Glu  
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Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu  
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aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg 96  
Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Ala Asn Lys Ala  
20 25 30

cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144  
His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
35 40 45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192  
Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
50 55 60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg	240		
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg			
65	70	75	80
tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc	288		
Ser Leu Cys Ala Gln Ala Glu Gly Ala Gly His Ser Pro Ser Phe			
85	90	95	
ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc	336		
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr			
100	105	110	
tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc	384		
Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys			
115	120	125	
acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct	432		
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser			
130	135	140	
gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt	480		
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu			
145	150	155	160
cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc	528		
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala			
165	170	175	
ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc	576		
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro			
180	185	190	
agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg	624		
Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu			
195	200	205	
gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga	672		
Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg			
210	215	220	
gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg	720		
Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr			
225	230	235	240
ccc cca cag gcg cac acc agc cta cag ccc cac cac cca tgg gag	768		
Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu			
245	250	255	

cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag	816		
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu			
260	265	270	
gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac	864		
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Gln Arg Pro His			
275	280	285	
ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg	912		
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val			
290	295	300	
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Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro			
305	310	315	320
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct	1008		
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala			
325	330	335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg	1056		
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly			
340	345	350	
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Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser			
355	360	365	
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Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile			
370	375	380	
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Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser			
385	390	395	400
agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga	1248		
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly			
405	410	415	
tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag	1296		
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln			
420	425	430	
cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata	1344		
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
435	440	445	

ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag	1392		
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			
450	455	460	
aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg	1440		
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly			
465	470	475	480
ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat	1488		
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
485	490	495	
gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag	1536		
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu			
500	505	510	
ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act	1584		
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr			
515	520	525	
tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc	1632		
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser			
530	535	540	
aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa	1680		
Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			
545	550	555	560
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct	1728		
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala			
565	570	575	
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg	1776		
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg			
580	585	590	
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt	1824		
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly			
595	600	605	
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc	1872		
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			
610	615	620	
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag	1920		
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
625	630	635	640

aag	ggg	aga	ggt	aaa	cat	tct	aat	tgc	atc	ata	gat	ttg	gaa	aag	acg	1968
Lys	Gly	Arg	Gly	Lys	His	Ser	Asn	Cys	Ile	Ile	Asp	Leu	Glu	Lys	Thr	
									645			650		655		
cta	gaa	gca	tat	gga	ata	cat	ggc	ctg	ttt	ggg	gca	tca	acc	aca	cgt	2016
Leu	Glu	Ala	Tyr	Gly	Ile	His	Gly	Leu	Phe	Gly	Ala	Ser	Thr	Thr	Arg	
					660			665			670					
ttc	cta	ttg	ggc	ctg	tta	agt	gat	gag	ggg	gag	aga	gag	atg	gag	aac	2064
Phe	Leu	Leu	Gly	Leu	Leu	Ser	Asp	Glu	Gly	Glu	Arg	Glu	Met	Glu	Asn	
					675			680			685					
atc	ttt	cac	tgc	cgg	ctg	tct	cag	ggg	agg	aac	ctg	atg	cag	tgg	gtc	2112
Ile	Phe	His	Cys	Arg	Leu	Ser	Gln	Gly	Arg	Asn	Leu	Met	Gln	Trp	Val	
					690			695			700					
ccg	tcc	ctg	cag	ctg	ctg	cag	cca	cac	tct	ctg	gag	tcc	ctc	cac		2160
Pro	Ser	Leu	Gln	Leu	Leu	Gln	Pro	His	Ser	Leu	Glu	Ser	Leu	His		
					705			710			715		720			
tgc	ttg	tac	gag	act	cg	aa	aa	ac	ttc	ctg	aca	caa	gt	atg	gcc	2208
Cys	Leu	Tyr	Glu	Thr	Arg	Asn	Lys	Thr	Phe	Leu	Thr	Gln	Val	Met	Ala	
					725			730			735					
cat	ttc	gaa	gaa	atg	ggc	atg	tgt	gta	gaa	aca	gac	atg	gag	ctc	tta	2256
His	Phe	Glu	Glu	Met	Gly	Met	Cys	Val	Glu	Thr	Asp	Met	Glu	Leu	Leu	
					740			745			750					
gtg	tgc	act	ttc	tgc	att	aaa	ttc	agc	cgc	cac	gt	aag	aag	ctt	cag	2304
Val	Cys	Thr	Phe	Cys	Ile	Lys	Phe	Ser	Arg	His	Val	Lys	Lys	Leu	Gln	
					755			760			765					
ctg	att	gag	ggc	agg	cag	cac	aga	tca	aca	tgg	agc	ccc	acc	atg	gta	2352
Leu	Ile	Glu	Gly	Arg	Gln	His	Arg	Ser	Thr	Trp	Ser	Pro	Thr	Met	Val	
					770			775			780					
gtc	ctg	ttc	agg	tgg	gtc	cca	gtc	aca	gat	gcc	tat	tgg	cag	att	ctc	2400
Val	Leu	Phe	Arg	Trp	Val	Pro	Val	Thr	Asp	Ala	Tyr	Trp	Gln	Ile	Leu	
					785			790			795		800			
ttc	tcc	gtc	ctc	aag	gtc	acc	aga	aa	ctg	aag	gag	ctg	gac	cta	agt	2448
Phe	Ser	Val	Leu	Lys	Val	Thr	Arg	Asn	Leu	Lys	Glu	Leu	Asp	Leu	Ser	
					805			810			815					
gga	aac	tcg	ctg	agc	cac	tct	gca	gt	aag	agt	ctt	tgt	aag	acc	ctg	2496
Gly	Asn	Ser	Leu	Ser	His	Ser	Ala	Val	Lys	Ser	Leu	Cys	Lys	Thr	Leu	
					820			825			830					

aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc	2544
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly	
835 840 845	
ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac	2592
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn	
850 855 860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct	2640
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala	
865 870 875 880	
gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta	2688
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu	
885 890 895	
cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag	2736
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln	
900 905 910	
gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac	2784
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp	
915 920 925	
ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag	2832
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu	
930 935 940	
ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg aaa cca agt	2880
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser	
945 950 955 960	
gtg atg acc cct act gag ggc ctg gat acg gga gag atg agt aat agc	2928
Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser	
965 970 975	
aca tcc tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc	2976
Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser	
980 985 990	
cat gtt gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc	3024
His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe	
995 1000 1005	
cca att gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg	3072
Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val	
1010 1015 1020	

gaa ctc ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr 1025	1030	1035	1040	3120
aag cct ttg ggg act gac gat gac ttt ctg ggg cct gaa gga aat gtg Lys Pro Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val 1045	1050	1055		3168
gat gtt gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc Asp Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe 1060	1065	1070		3216
ccc act gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg Pro Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu 1075	1080	1085		3264
gta agg gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag Val Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln 1090	1095	1100		3312
cac ctg gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc His Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly 1105	1110	1115	1120	3360
ccc ttg ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc Pro Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile 1125	1130	1135		3408
cac ctc ccc cac ttc atc tcc ctc caa ggt gag gtg gac gtc tcc tgg His Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp 1140	1145	1150		3456
ttt ctc gtt gcc cat ttt aag aat gaa ggg atg gtc ctg gag cat cca Phe Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro 1155	1160	1165		3504
gcc cgg gtg gag cct ttc tat gct gtc ctg gaa agc ccc agc ttc tct Ala Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser 1170	1175	1180		3552
ctg atg ggc atc ctg ctg cgg atc gcc agt ggg act cgc ctc tcc atc Leu Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile 1185	1190	1195	1200	3600
ccc atc act tcc aac aca ttg atc tat tat cac ccc cac ccc gaa gat Pro Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp 1205	1210	1215		3648

att aag ttc cac ttg tac ctt gtc ccc agc gac gcc ttg cta aca aag			3696
Ile Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys			
1220	1225	1230	
gct ata gat gat gag gaa gat cgc ttc cat ggt gtg cgc ctg cag act			3744
Ala Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr			
1235	1240	1245	
tcg ccc cca atg gaa ccc ctg aac ttt ggt tcc agt tat att gtg tct			3792
Ser Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser			
1250	1255	1260	
aat tct gct aac ctg aaa gta atg ccc aag gag ttg aaa ttg tcc tac			3840
Asn Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr			
1265	1270	1275	1280
agg agc cct gga gaa att cag cac ttc tca aaa ttc tat gct ggg cag			3888
Arg Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln			
1285	1290	1295	
atg aag gaa ccc att caa ctt gag att act gaa aaa aga cat ggg act			3936
Met Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr			
1300	1305	1310	
ttg gtg tgg gat act gag gtg aag cca gtg gat ctc cag ctt gta gct			3984
Leu Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala			
1315	1320	1325	
gca tca gcc cct cct ttc tca ggt gca gcc ttt gtg aag gag aac			4032
Ala Ser Ala Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn			
1330	1335	1340	
cac cgg caa ctc caa gcc agg atg ggg gac ctg aaa ggg gtg ctc gat			4080
His Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp			
1345	1350	1355	1360
gat ctc cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg			4128
Asp Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val			
1365	1370	1375	
gag cag gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg			4176
Glu Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met			
1380	1385	1390	
gtg gag aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att			4224
Val Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile			
1395	1400	1405	

agt gaa agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg 4272  
Ser Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu  
1410 1415 1420

taa aatgagtcag ttaggtagtc tggaagagag aatccagcgt tctcattgga 4325  
1425

aatggataaa cagaaatgtg atcattgatt tcagtgttca agacagaaga agactggta 4385

acatctatca cacaggctt caggacagac ttgtaacctg gcatgtacctt attgactgta 4445

tcctcatgca ttttcctcaa g 4466

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<211> 1424

<212> PRT

<213> Artificial Sequence

<400> 12

Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu  
1 5 10 15

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala  
20 25 30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr  
35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln  
50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg  
65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe  
85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr  
100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys  
115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser  
130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu  
145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala  
165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro  
180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu  
195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg  
210 215 220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr  
225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu  
245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu  
260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Gln Arg Pro His  
275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val  
290 295 300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro  
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala  
325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly  
340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser  
355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile  
370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser  
385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly  
405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln  
420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile  
435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln  
450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly  
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp  
485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu  
500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr  
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser  
530 535 540

Lys Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln  
545 550 555 560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala  
565 570 575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg  
580 585 590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly  
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu  
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu  
625 630 635 640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr  
645 650 655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg  
660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn  
675 680 685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val  
690 695 700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His  
705 710 715 720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala  
725 730 735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu  
740 745 750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln  
755 760 765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val  
770 775 780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu  
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser  
805 810 815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu  
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly  
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn  
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala  
865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu  
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln  
900 905 910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp  
915 920 925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu  
930 935 940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser  
945 950 955 960

Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser  
965 970 975

Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser  
980 985 990

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe  
995 1000 1005

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val  
1010 1015 1020

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr  
025 1030 1035 1040

Lys Pro Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val  
1045 1050 1055

Asp Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe  
1060 1065 1070

Pro Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu  
1075 1080 1085

Val Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln  
1090 1095 1100

His Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly  
105 1110 1115 1120

Pro Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile  
1125 1130 1135

His Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp  
1140 1145 1150

Phe Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro  
1155 1160 1165

Ala Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser  
1170 1175 1180

Leu Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile  
185 1190 1195 1200

Pro Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp  
1205 1210 1215

Ile Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys  
1220 1225 1230

Ala Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr  
1235 1240 1245

Ser Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser  
1250 1255 1260

Asn Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr  
265 1270 1275 1280

Arg Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln  
1285 1290 1295

Met Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr  
1300 1305 1310

Leu Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala  
1315 1320 1325

Ala Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn  
1330 1335 1340

His Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp  
345 1350 1355 1360

Asp Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val  
1365 1370 1375

Glu Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met  
1380 1385 1390

Val Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile  
1395 1400 1405

Ser Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu  
1410 1415 1420

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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

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ccgaattcac catggctggc ggagcctggg gc 32

<210> 14  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 14  
ccgctcgagt caacagaggg ttgtgggtggt cttg 34

<210> 15  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 15  
cccgaattcg aacacctcgcat agtcatactg c 31

<210> 16  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 16  
gtccccacaac agaattcaat ctcaacggtc 30

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<212> DNA  
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<400> 17  
tgtgatgaga gaagcggtga c

21

<210> 18  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 18  
ccgctcgagc aaagaagggt cagccaaagc

30